Tone King "Metropolitan"

User's Manual

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Note from the Builder

Thank you for choosing this Tone King Metropolitan guitar amplifier. The Metropolitan is the last in a line of amplifiers, starting with the Meteor, and then the Meteor II, which add modern qualities to the vintage sounds explored with the older models, such as the Imperial and Comet. The idea was to retain those same great vintage tones, but to add refinements such as more clarity and detail, a more room-filling, three-dimensional soundfield, and certain features to provide more flexibility.

One of these features is the new "Phase-4" Output Power Control Circuitry. This proprietary circuit allows control over the amount of power produced by the output stage, allowing you to obtain overdriven sounds at lower volume. This unique circuit operates differently than an attenuator, master volume, power scaling, or any other scheme that I am aware of. It is a particularly good match for the Metropolitan, which is intended as a more modern take on vintage sound, because it reduced power supply sag as you reduce the output power, resulting in a more powerful attack.

I've composed this User's Manual as a means of describing the features and operation of the Metropolitan. If you have any questions which are not covered here, please feel free to contact me personally at mail@toneking.com.

Mark Bartel
Tone King Amplfiers

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1. Front Panel Controls

Gain Switch

The Gain switch controls the gain of the first stage of the preamp, which is shared between the Rhythm and Lead channels. Thus, it acts as a global gain control which helps match the overall gain level to the output level of your guitar's pickups.

I almost always suggest using the high gain setting, unless you have particularly high output pickups, or you want a lot of headroom. The higher gain setting seems to give the amp more punch, a faster attack, and more clarity.

Note that you will hear an audible "thump" when you switch between the two gain settings. This thump is a result of the switch acting on a very sensitive part of the circuit. Any means of reducing the thump would degrade the purity of the signal path, so it was decided that it was best to allow the thump, and maintain the pure signal path. This is generally not a problem, as you will typically find that you'll use one setting or the other with a given guitar, no matter how the two channels are dialed in. You may want to turn the volume control down all the way (on the selected channel) when switching between gain settings, to eliminate the "thump".

Rhythm Channel

The Rhythm channel includes controls for Volume, Treble, and Bass, as well as a "Bright" switch. This channel is voiced somewhere between a typical "blackface" preamp and a typical "tweed" preamp, and has a wider range of tones than either of those preamp types.

A typical "blackface" preamp can be quite lean in the midrange, which can give you a deep, lush sound when playing in isolation, but this type of voicing can get drowned out and sound thin when played in a band situation.

A typical "Tweed" preamp has a sweet and vocal midrange, but can tend to sound boxy on clean tones.

The Metropolitan's Rhythm channel preamp straddles the line between these two preamp types. With the bass and treble controls set to their nominal values, you'll get a clean tone that combines a prominent and present midrange with a lush and shimmering overall response.

Rhythm Channel (Cont'd)

Getting to Know the Bass and Treble Controls

You'll notice that the Bass and Treble controls affect the tone quite differently than the Bass and Treble controls of a conventional "blackface" style preamp. With a typical "blackface" preamp, the Bass and Treble controls simply give you a different flavor of the same basic tone.

The Metropolitan's Bass and Treble controls have a more prominent effect - they alter the actual voicing and character of the tone. Because of this, you should experiment with them fully to understand their effect on the Rhythm's channel's overall voicing.

Although the Rhythm channel has no midrange control, it offers more flexibility than most similar preamps, even those which include a midrange control, because of the way the Bass and Treble controls transform the overall character and voicing.

Here are a few sample settings. You may want to start with these settings and tweak the bass and treble controls to taste.

Blackface Clean with Tweed Mids

Gain	Volume	Bright	Treble	Bass
High	1.5	Off	5	6

Traditional Blackface Clean with Scooped Mids

Gain	Volume	Bright	Treble	Bass
High	1.5	On	4	8

Lead Channel

The Lead channel starts out with a Tweed style preamp, which drives a proprietary tone-shaping circuit built around the Mid-Bite control, a unique Tone King feature. This proprietary circuit transforms the basic tweed tone to more of a crunchy rock tone as you turn up the mid-bite control. This is accomplished by simultaneously tightening up the bass, rolling off the very high frequencies, increasing the gain, and developing a pronounced upper midrange peak. The Mid-Bite control is the key to dialing in your own particular sound on the lead channel, so you may want to experiment and observe its effect as you rotate it from 0 to 10.

Lead Channel (Cont'd)

Here are a few sample settings which demonstrate just a few of the tones available on the lead channel:

Tweed Edge of Breakup

Gain	Volume	Tone	Mid-Bite
Low	4	7	0.5

Cranked Tweed

Gain	Volume	Tone	Mid-Bite
High	4	5	3

Rock Grind

Gain	Volume	Tone	Mid-Bite
High	2	6	9

Hard Rock Gainy Grind

Gain	Volume	Tone	Mid-Bite
High	4	7	10

Channel Switching

You can switch between the two preamp channels with either the front panel Channel switch, or by using the footswitch.

When using the footswitch, make sure that the front panel Channel switch is in the Rhythm position.

When using the footswitch, you'll notice that the LED on the footswitch indicates the channel selected. When the LED is lit, the Lead channel is selected. When the LED is not lit, the Rhythm channel is selected.

Reverb

The Metropolitan includes a built in 3-spring, tube-driven reverb circuit. Reverb is applied to both the Rhythm and Lead channels. In order to compensate for the higher gain of the Lead channel, the reverb drive is reduced slightly on the Lead channel. This reduction helps to match the reverb level when switching between preamp channels, with just slightly more reverb on the Rhythm channel.

The reverb level is controlled by the front panel Reverb control, which adjusts the amount of the reverb signal, from the reverb receiver, which is mixed into the signal path.

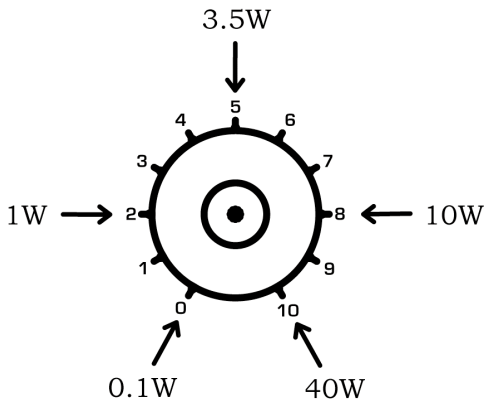
The footswitch provides the ability to turn the reverb drive on and off. An LED on the footswitch indicates whether the reverb drive is on (LED on) or off (LED off).

When the footswitch is not plugged into the amp, the reverb circuit is always active. In this case, if you don't want to use the reverb effect, then you should turn the reverb control down to 0.

Output Power Controls

The Output Power controls give you unparalleled control over the tone and volume of your amp. These controls determine the actual output power produced by the power tubes of your amp, via Tone King's proprietary Phase-4 Power Control circuitry.

Separate Output Power controls are provided for the Rhythm and Lead channels. The following diagram shows the approximate output power at various settings of the Output Power controls:



Output Power on the Rhythm Channel

On the Rhythm channel, **I suggest always using full power (Output Power = 10) for clean tones, regardless of how loud you are playing**. It's always best to have the most possible headroom for a good clean tone, even if you are only playing at very low volume. For clean tones at low volume, you may find it necessary to use the low gain preamp setting, and to set the volume control down quite low, but you should use the full output power setting for maximum clarity and dynamics.

Output Power Controls (Cont'd)

The only case in which I suggest using a lower power setting on the Rhythm channel is that in which you are pushing the Rhythm channel harder, for some edge and breakup. Naturally, the only way to control the volume in this situation is to turn down the Output Power control.

Output Power on the Lead Channel

The Lead channel is primarily designed for overdriven and distorted sounds, and this is where the Output Power controls become essential for controlling the volume of your amp. In general, it's best to use the highest output power setting possible for your playing situation, because of the factors mentioned below.

General Notes on Using the Output Power Controls

Although the Phase-4 Power Control circuitry does the best possible job of reducing output power without changing the tone of the amp's circuitry, there are other variables in play at lower volume which do result in some apparent tone change. Here are a few factors that you should be aware of -

Speaker breakup and compression is a big part of the tone and feel of the amp when played at high volume. At low power settings, the speaker responds differently, and does not break up and compress as it does at high power.

The ear's natural response curve varies at different volume levels, which changes the way you perceive sounds at different volume levels. Quieter sounds tend to give the impression of having less bass content.

One way to help compensate for the above two factors is to intentionally mismatch the speaker impedance, via the impedance switch on the back panel. At low power settings (1W or below), you might try switching the impedance switch to the 4-ohm position (it should normally be set to 8-ohms). Doing this will give you a fatter, thicker, slightly more elastic tone. The downside is that it also tends to roll off the high frequencies a bit as well.

At lower volume, there is a tendency to hit the guitar strings harder and play more aggressively than you would if the amp were tuned up very loud. It may take some time to get used to maintaining your playing style at reduced volume.

2. Back Panel Controls

AC Power

Always use a grounded AC cord, and make sure that a proper ground connection is supplied to the amp. Never attempt to lift or defeat the ground connection to the amp.

Fuse

A standard 2A fuse (style 3AG) should be used.

Power Switch, Standby Switch

When powering up the amp, you should start with both the Power and Standby switches in the "off" position.

First, turn on the Power switch. This will apply power only to the tube filaments and the low-voltage circuitry (e.g. the fan).

After turning on the Power switch, allow the tubes to warm up for about 1 minute, then turn on the Standby switch.

The power-down sequence is not as important as the power-up sequence. When turning the amp off, you may turn Power off before Standby, or turn Standby off before Power, or turn them both off at the same time.

Footswitch

Connect the footswitch to the amp with the supplied cable, or with any standard ¼" TRS -to- ¼" TRS cable.

The footwitch allows you to control both the preamp channel selection and the reverb drive on/off. LEDs indicate the current switching status, as follows:

Channel switch: LED on = Lead channel
Reverb switch: LED on = Reverb on

When using the footswitch, make sure to set the front panel Channel switch to the Rhythm position.

Speaker Jacks, Impedance Switch

When only one speaker is being used (e.g. the internal speaker), it must be plugged into the “Main” speaker jack.

The Extension speaker jack may only be used if there is also a speaker plugged into the Main speaker jack. Inside the amp, the Extension speaker jack is wired in parallel with the Main speaker jack.

The Impedance switch allows you to match the output impedance of the amp to the combined impedance of the speaker(s) used, or to intentionally mismatch the impedance if desired, to change the tone.

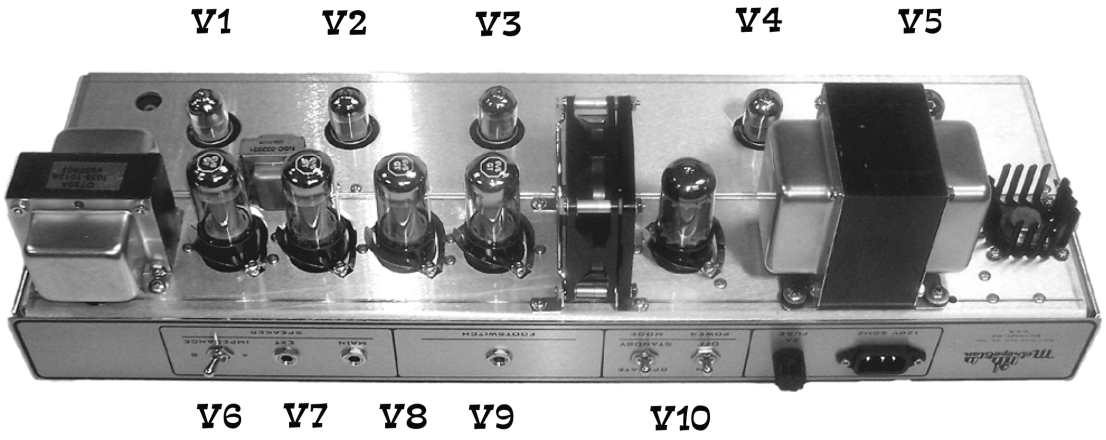
The internal speaker supplied with the amp is rated at 8 ohms impedance, so you should normally use the 8-ohm impedance selection if you are using only the internal speaker.

You may safely mismatch the impedance by as much as doubling or halving the selected impedance. Mismatching beyond this is not recommended. For example, if the Impedance switch is set to 8 ohms, you may use a combined speaker load as low as 4 ohms or as high as 16 ohms.

When using two or more speakers, keep in mind the way in which the combined impedance is computed from the individual speaker impedances. When using two or more speakers with the Metropolitan, they will always be effectively wired in parallel, so the effective combined impedance will be ½ of the impedance of the individual speakers.

For example, if you are using both the internal 8-ohm speaker connected to the Main speaker jack, and an additional 8-ohm extension speaker connected to the Extension speaker jack, then the total combined impedance will be 4-ohms, so you should set the Impedance switch to the 4-ohm position.

3. Tube Installation and Replacement



Choice of Tube Types and Brands

I currently suggest the following tube types:

No.	Type and Brand	Function
V1	TAD 12AX7A-C / Tung Sol 12AX7	Stage 1 (Rhythm+Lead), Stage 2 (Rhythm)
V2	TAD 12AT7	Reverb Driver
V3	TAD 12AX7A-C / Tung Sol 12AX7	Stage 2 (Lead], Stage 3 (Lead)
V4	TAD 12AX7A-C / Tung Sol 12AX7	Reverb Receiver
V5	TAD 12AX7A-C / Tung Sol 12AX7	Phase Inverter
V6-V9	TAD 6V6	Output Tubes
V10	TAD/Sovtek 5AR4	Rectifier

6V6 WARNING !

The following brands are NOT recommended, as we've experienced a high rate of red-plating and short circuit faults with these:

- Tung Sol 6V6GT
- EH 6V6GT manufactured after December 2014

We had been recommending EH brand 6V6s for years. These were great tubes, but some time around December 2014, the manufacturer changed the design , and they now appear to share the same construction as the Tung Sol 6V6. After the design change, we noticed the same reliability problems as the Tung Sol 6V6, so we no longer recommend using the EH 6V6 of current manufacture.

6V6 Tube Choices:

I prefer the TAD 6V6 for its warmth, smooth compression, and balanced top end.

The JJ brand 6V6 is another acceptable choice. The JJ 6V6 has a bigger, fatter sound than the TAD, but is a bit less lively sounding, and has a more muted top end. It sounds a bit more like a 6L6 than a 6V6.

Choice of Tube Types and Brands (Cont'd)

At this point in time, I believe that genuine vintage tones can only be obtained by the use of vacuum tubes. Although tubes sound great, there are very valid reasons why they were abandoned by the electronics industry over 40 years ago. Tubes are fragile, generate a lot of heat, are sensitive to mechanical vibration, and subject to manufacturing defects.

I have selected the particular tube types and brands in the Metropolitan because of their particular tonal qualities. I feel that they provide the most well-balanced tone which works well with all guitars and all settings. However, some customers find that they wish to tailor the tone of their amp to their particular tastes by using different brands of tubes, so I'll offer some comments on my experience with various tube types.

12AX7 Tubes

Both the TAD 12AX7A-C, and the Tung Sol 12AX7A are a great match for the Metropolitan. Both have a nice balance of detail and warmth, with the Tung Sol having perhaps a bit more transparency in the top end, and the TAD having a bit less glassiness but still a nice presence in the upper mids.

EH 12AX7s are very similar to Tung Sol 12AX7s – both are very quiet with very low microphonics and are a bit on the bright side, with an extended top end. Tung Sols seem a bit warmer than EHs.

The Svetlana 12AX7, a short-plate tube, has nearly the clarity of the 12AX7EH, and slightly more bottom end, but is a bit congested in the midrange. Years ago, I had selected this brand as the brand of choice for the Meteor/II amp, but later changed to a combination of the 12AX7EH and the 12AX7LPS.

Sovtek 12AX7LPS – this long-plate 12AX7 has a big, warm sound that comes close to a good NOS long-plate 12AX7. However, this tube can tend to be microphonic.

Alternate Tube Choices You May Want to Try

Reducing Gain: If you find the preamp too gainy, and you find that you're setting the volume controls down quite low to get sufficient clean headroom, you may want to try swapping in a 12AU7 in the V2 position. You can reduce the gain further by swapping a 12AU7 into the V1 position as well.

Installing Tubes

When installing tubes, you may find it helpful to lay the amp on its side, on a table, and shine a light directly into the back of the amp, to aid in locating the position of each tube. Tubes must be installed in the correct orientation. The smaller, all-glass tubes have a blank space in the ring of pins which must line up with the blank space in the ring of tube pins in the tube socket, located on the chassis. The larger, bakelite-base tubes have a small cylinder with an indexing key in the center of the ring of tube pins, and this indexing key must match up with the corresponding slot in the socket on the chassis.

Replacing Output Tubes

The output stage of the Metropolitan is fully cathode biased, and no bias adjustment is necessary when changing output tubes. The design of the Metropolitan's output stage allows for a fairly wide variation in tube characteristics, so any known brand of 6V6 can be installed, and will work properly and be appropriately self-biased.

Tube Quality

Currently available tubes are not of the same quality level as in the 1950's. Recently manufactured tubes are built in China, Russia, or the Czech Republic, and are not built to the same quality standards that, say, RCA used to manufacture tubes in the U.S., in the 1950s. It would seem that the obvious solution would be to use new-old-stock tubes from these older periods. However, I've found that many of these new-old-stock tubes have gone gassy or developed other problems.

As a result, we musicians must recognize that, while we prefer to use vacuum tubes because of their tone, they can be imperfect devices, and are most certainly the least reliable component in the entire amplifier.

Tube problems generally reveal themselves as a crackling noise which can occur continuously, sporadically, in response to mechanical vibration, or in response to your playing (e.g. a crackling or other type of noise which occurs only when you hit a note).

I subject all tubes to a thorough burn-in and test procedure to ensure that they are fully up to spec and operating perfectly. However, you must be aware that the majority of tube failures occur early in their life, and may come about as a result of the jostling and jarring that an amp can receive in shipping. In spite of the exhaustive testing I perform at the shop, early-life tube problems cannot always be found in such testing. The first two months or so are the most tenuous period for any set of tubes. Most manufacturing defects will be revealed in the first two months of their life, but many are not detectable in initial testing, even after a burn-in period.

If you notice any noises, cracking, or any other odd behavior of your amplifier in this period, note that it is most likely to be the result of a defective tube, and should be debugged as such.

Premier Builders Guild LLC

Limited Warranty

Premier Builders Guild – Tone King Amplifiers Division
201 S. Highland Avenue, Box 204
Pittsburgh, PA 15206

This warranty gives you specific legal rights; you may also have other rights which vary from state to state. There are no express warranties except those listed below.

Length of Warranty

This warranty shall remain in effect for five years from the date of sale of the product as shown on the original bill of sale.

What is Covered

This warranty covers all defects in material and workmanship in this product, with the following exceptions:

1. Damage or deterioration of the cabinet, or any other cosmetic damage which occurs after delivery is not covered by this warranty.
2. Damage after initial delivery resulting from accident, unreasonable use, or neglect, is not covered by this warranty.
3. Damage resulting from the performance of repairs by someone other than the Tone King Amplifier Company is not covered by this warranty.
4. Damage occurring during shipment or delivery of this product to the Tone King Amplifier Company after initial delivery of the product is not covered by this warranty.
5. Vacuum tubes are considered a user-replaceable item, as they are expected to wear out and require replacement over a reasonable period of time. Tubes are warranted to be serviceable for a period of 90 days from the date of sale.
6. The speaker(s) in this amplifier has(have) been selected for use only with this amplifier. If the speaker(s) of this amplifier is(are) connected to an amplifier other than the intended amplifier, any warranty of this speaker shall be deemed void.

What We Will Pay For

The Tone King Amplifier Company will pay for all labor and material expenses to fix or replace all items covered under this warranty. The customer will pay shipping charges to return the product to the Tone King Amplifier Company. If the necessary repairs are covered under this warranty, the Tone King Amplifier Company will pay any shipping charges required to return the product to the customer.

Limitation of Implied Warranties

All express or implied warranties of merchantability and fitness for a particular purpose are limited in duration to the length of this warranty, unless otherwise provided by state law.

Exclusion of Certain Damages

The Tone King Amplifier Company's liability is limited to the repair or replacement, at our option, of any defective product, and shall in no event include incidental or consequential damages of any kind. Some states do not allow limitations on the length of an implied warranty and/or do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

Obtaining Warranty Service

If your unit requires service, it should be returned to the Tone King Amplifier Company at the address listed above. Before returning the unit, you must contact the Tone King Amplifier Company and obtain return authorization.

CE Declaration

Premier Builders Guild, LLC
201 S. Highland Avenue, Suite 204
Pittsburgh, PA 15206
412-362-0309

CE

DECLARATION OF CONFORMITY
Report #R070212

We, Premier Builders Guild, in coordination with CES Laboratories, declare, taking this declaration under our total responsibility, that the below models are in conformity with the provisions of the following EC Directive(s) when installed in accordance with the installation instructions contained in the product documentation:

2006/95/EEC Low Voltage Directive
2004/108/EEC EMC Directive
2011/65/EEC RoHS-Directive

And that the standards and/or technical specifications have been applied to the following families of products:

Imperial	Metropolitan
Galaxy	Falcon
Sky King	Royalist
Imperial MK II	Falcon Grande

Manufacturer/Importer
Date: 8/25/2015

Signature: Christopher W. Fleming

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